

XXII.—On some new and remarkable North-Atlantic  
*Brachiopoda*. By J. GWYN JEFFREYS, LL.D., F.R.S.

AMONG the zoological results of my cruise in H.M.S. 'Valorous' last year, on the return voyage from Davis Strait, were three Brachiopods, dredged in deep water, which require special notice. A description of them is subjoined.

*Terebratula tenera* \*, Jeffreys.

SHELL uniformly oval, with the broader end in front, compressed, of a thin and delicate texture, and of a dullish hue: *sculpture* slight, curved and parallel lines of growth, besides numerous minute tubercles which cover all the surface and are the caecal terminations of the permeating canals: *colour* yellowish brown: *margins* even, rounded in front, and curving gradually behind: *beak* short, not prominent: *foramen* or byssal passage small, semioval, incomplete on the inner side: *deltidium* slight and delicate: *hinge-plate* broad and proportionally strong: *teeth* in the upper (or more convex) valve short and curved: *skeleton* or apophysis in the lower (or smaller) valve consisting of two thin and flexuous blades, which are slenderer and approximate more than in *T. cranium*, but have similar spurs and points; the loop is horseshoe-shaped: *inside* of lower valve furnished with two short ridges, which extend on each side from the deltidium, with a slight septum between and below the ridges. L. 0·5, B. 0·4.

Lat. 56° 11' N., long. 37° 41' W., 1450 fathoms, *Globigerina*-ooze and stones. Two or three perfect specimens, and several valves and fragments.

This species differs from *T. cranium* in being only half the size in exact measurement, and consequently one fourth in bulk; it is of a different shape, texture, and colour, compressed instead of convex, having a much shorter beak and smaller orifice, with not half the proportionate number of tubercles; and the blades are closer together, and do not extend so far towards the front. In the young of each species the comparative number of tubercles and prominence of the beak are distinctly marked; and the septum in the present species is shorter, although conspicuous and gnomon-shaped.

ATRETIA †, g. n., Jeffreys.

SHELL inequivalve, triangular, imperforate, of a fibrous texture: *beak* prominent and pointed, but not incurved: *byssal orifice* elongated: *hinge-line* narrow: *skeleton* composed of

\* Tender.

† Imperforate.

two funnel-shaped processes, which diverge from the beak in the upper or larger valve, and of two blade-like processes besides an upright plate or septum in the upper part of the lower or smaller valve.

Its nearest ally is *Rhynchonella*, from which it appears to be distinguishable only by the straight instead of incurved beak, and by the arms or brachial apparatus not being coiled.

*Atretia gnomon* \*, Jeffreys.

SHELL triangularly oval, compressed, thin, semitransparent, and rather glossy: *sculpture*, a very few slight and indistinct longitudinal ridges, and numerous close-set microscopic imbricated scales: *colour* white: *margins* broad and rounded in front, sloping gradually at the sides, and acute-angled behind: *beak* in the upper or larger valve somewhat prominent: *foramen* triangular and groove-like, narrow, and exhibiting inside, below the beak (as in *Rhynchonella psittacea*), a series of arched septa or laminar marks of growth: *byssus* cylindrical: *deltidium* well defined: *hinge-plate* strong: *teeth* in upper valve two, resting on a triangular funnel with its mouth or opening outwards; in the lower valve there are also two teeth, which are nearly straight, slender, and blade-like: *sockets* deep: *skeleton* composed of an erect and thin triangular crest or septum in the middle of the lower valve, like a sun-dial-stile, which is pointed at the top, besides the above mentioned processes in each valve; on either side of the septum are two slight parallel ridges which extend from the hinge, and a diverging ridge towards the lower end of the septum. L. 0·25, B. 0·2.

A single living specimen occurred in lat.  $63^{\circ} 9' N.$ , long.  $56^{\circ} 43' W.$ , at a depth of 1100 fathoms, clayey mud. It was attached by the byssus to a fragment of a tubular Foraminifer, and covered with a cluster of young *Atretie* in different states of growth, and a dwarf form or variety of *Truncatulina lobatula*. Valves and fragments were also found in lat.  $59^{\circ} 10' N.$ , long.  $50^{\circ} 25' W.$ , and in lat.  $56^{\circ} 11' N.$ , long.  $37^{\circ} 41' W.$ , at depths of 1750 and 1450 fathoms. Imperfect valves had been dredged by me during the 'Porcupine' Expedition of 1869, in stations 20 and 30, at depths of 1443 and 1380 fathoms, off the west coast of Ireland. This curious Brachiopod was noticed and figured by Mr. Davidson in his Supplement to the 'Monograph of the British Fossil Brachiopoda' (Publications of the Palæontographical Society, 1874), p. 7, pl. i. figs. 7-10; but the restoration from the imperfect

\* Having a septum like the hand or stile of a sun-dial.

valves is not quite satisfactory, because the perfect specimen is much more triangular and compressed, the beak more pointed, and the foramen narrower than in the figures given by Mr. Davidson. He could not, however, have done better with the incomplete specimens which I had then placed in his hands.

*Discina atlantica* \*, King.

*Discina atlantica*, King, Proc. Nat.-Hist. Soc. Dublin, 1868.

BODY semiglobose: *arms* furnished with very long and slender setæ or stiff hair-like cilia, which project beyond the edge of the shell on every side to an extent fully equalling its diameter: *byssus* cylindrical and narrow.

SHELL conical, more or less circular: *upper valve* umbrella-shaped, thin, semitransparent, and rather glossy: *sculpture*, numerous close-set and concentric minute striæ or lines of growth, which become somewhat irregular towards the outer edge of the shell, and microscopically wrinkled lengthwise in a radiating direction: *colour* pale brownish yellow: *margins* thin and sharp: *beak* or apex very small, nipple-shaped, depressed, placed nearer the dorsal margin: *lower valve* flat, thin, having near its middle a comparatively small round disk, within which is an oval slit for the passage of the byssal stalk of attachment; this disk is slightly sunk within any calcareous substance to which it is attached, as if the byssus had the power of excavation; the rest of the lower valve is free and concentrically striate, like the upper valve: *muscular* (adductor) *scars* in the upper valve club-shaped, rather close together; no scars observable in the lower valve. Not the slightest trace of a tubular or perforated structure could be detected in either valve, with one of Smith and Beck's best microscopes, under a lens of  $\frac{1}{3}$  power. L. 0.2, B. 0.2.

Lat.  $56^{\circ} 11' N.$ , long.  $37^{\circ} 41' W.$ , 1450 fathoms, *Globigerina*-ooze and stones (two living specimens and several upper valves); lat.  $56^{\circ} 1' N.$ , long.  $34^{\circ} 42' W.$ , 690 fathoms, *Globigerina*-ooze. 'Porcupine Sounding,' 1862, 1240 fathoms (Capt. Hoskyns); 'Porcupine' Expedition, 1869, 1366 fathoms (J. G. J.); North-Atlantic sounding, while fishing up the deep-sea telegraph cable, 2400 fathoms (Sir James Anderson).

The surface of one of the upper valves dredged in 1450 fathoms exhibits the impressions or marks of two byssal disks, by which other specimens had apparently been attached to it, forming small circular shallow pits, with a deeper excavation for the stalk or plug. The genus *Discina*, of which the

\* Belonging to the Atlantic Ocean.

present species is the sole known representative in the European seas, thus (at least analogically) connects the Brachiopoda with the Conchifera through *Anomia*, the byssal plug of which has a similar excavating or eroding power (see 'British Conchology,' vol. ii. p. 32). Strong muriatic acid, subsequently diluted, produced only a partial effect on the shells of *D. atlantica* and *D. striata*, both of which contain a considerable portion of carbonate of lime, but are to a certain extent chitinous. *Crania* is entirely calcareous. Professor King and Mr. Davidson described *D. atlantica* as "corneous;" Dr. Carpenter says the shell of *D. lamellosa* is "horny;" and M. Gratiolet adds that *Discina* is composed of two layers, one "corné" and the other "calcaire." The outer or calcareous layer of *Discina* is, according to Gratiolet, permeated by minute cæcal canals, and the inner or "corné" layer is imperforate; but I cannot help thinking that a further microscopic examination would be desirable. Otherwise it is difficult to conceive how there could be any connexion or communication between the vascular system of the body or animal and the outer layer of the shell, as exists in *Terebratula* and *Crania*. I cannot find any perforated or tubular structure in *D. striata*.

*D. atlantica* is probably the same species as the fossil from the Coralline Crag at Sutton, which Mr. S. Wood at first doubtfully named *D. norvegica*, and afterwards *D. fallens*; and which Mr. Davidson at first doubtfully named *Orbicula lamellosa*, and since *D. fallens* (see Ann. and Mag. Nat. Hist. 1840, and the Palæontographical Society's Publications for 1852 and 1874). But *Orbicula norvegica* of Sowerby (= *O. lamellosa*, Broderip) is a very different and tropical species of *Discina* (see also Trans. Linn. Soc. vol. xiii. p. 465, and the 'Malacological and Conchological Magazine,' 1838, pp. 19-23).

XXIII.—On the Structure of the Mouth in Sucking Crustacea.

By Professor J. C. SCHIÖDTE\*.

[Continued from 'Annals,' 1868, 4th ser. vol. i. p. 25.]

II. ANTHURA. III. LAPHYSTIUS.

16. Next to Cymothoidæ, though as a type of a separate family, the genus *Anthura* must be placed.

The specimens which have served for the following examination belong to *Anthura carinata*, Kröyer (Naturh. Tidsskr.

\* Translated and partly condensed, with the sanction of the author, from 'Naturhistorisk Tidsskrift,' 3rd ser. vol. x. Copenhagen, 1875, with five plates (explanations in Latin). The first part (Cymothœ) was translated in the 'Annals,' 1868, 4th series, vol. i. pp. 1-25.